



Sand Creek Massacre National Historic Site

Alternatives Transportation Plan for the General Management Plan

National Park Service

U.S. Department of the Interior

Sand Creek Massacre National Historic Site



February, 2011
DRAFT

Prepared by OV Consulting for the National Park Service

Sand Creek Massacre National Historic Site

Draft Alternatives Transportation Plan February 2011

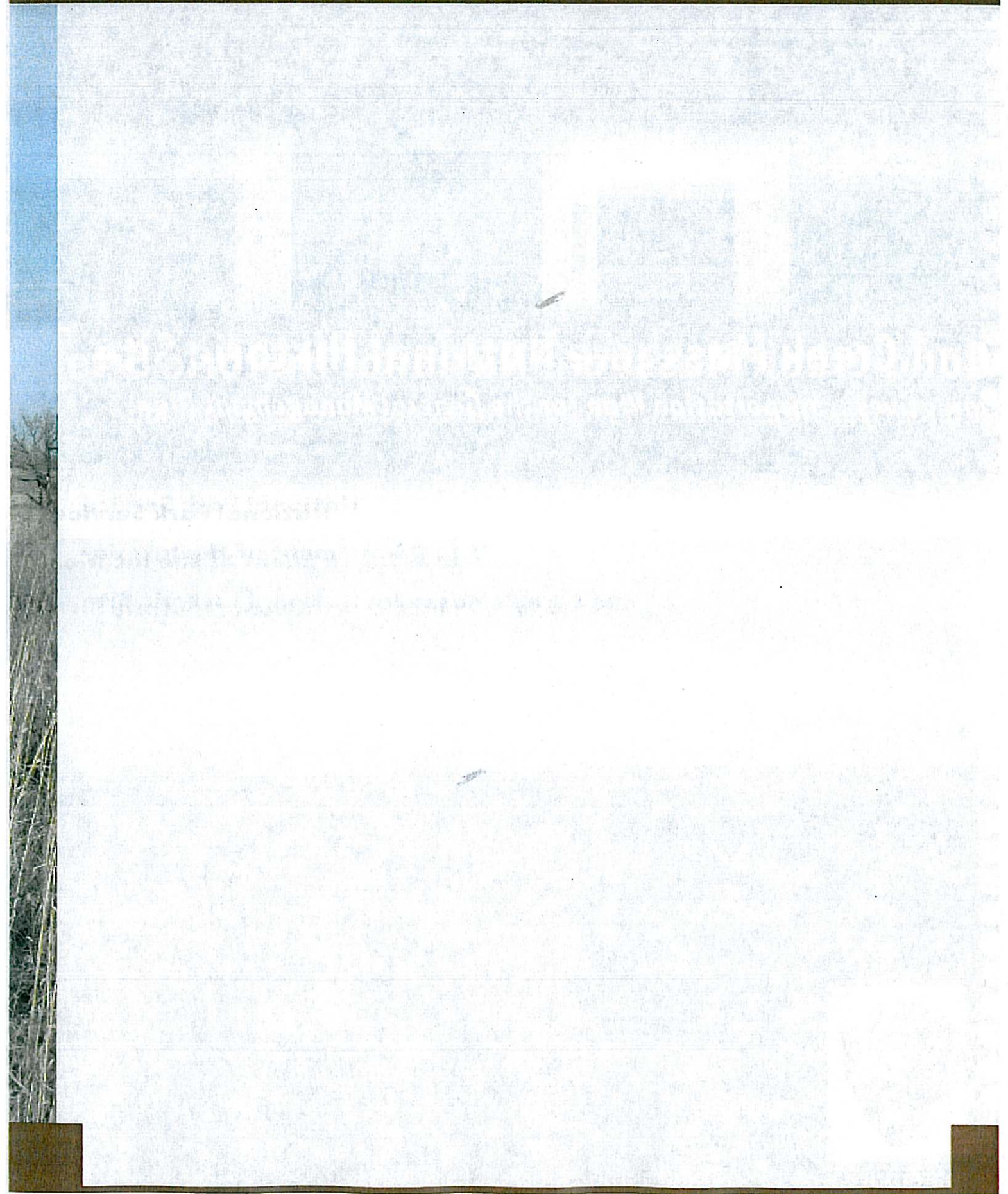


Table of Contents

Introduction	1
Sand Creek Massacre National Historic Site Background and Description	1
Project Purpose	1
Existing Conditions	2
Regional Travel	2
Visitation to Sand Creek Massacre NHS	4
Sand Creek Massacre NHS	5
Alternative Routes and Points of Access to the Site	6
Traffic Characteristics and Design Standards	7
Signs	9
Other Considerations	13
Site Specific Traffic Operations	13
Recommendations	14
Sand Creek GMP Alternatives Transportation Analysis	15
Alternative A – Continuation of Existing Conditions	16
Alternative B – Connecting People, History and Place	17
Alternative C – Emphasis on Memorialization	20
Alternative D – A Balanced Visitor Experience	21
Alternative E – Preserving Sensitive Resources	23
Regional Planning	26
Wayfinding Plans	27
Kiowa County Planning	29
Colorado Division of Wildlife Birding Trails	30
Regional Resources and Proposed Connectivity	30
Sources	32
Conclusion	33
Figure 1: Sand Creek Massacre National Historic Site – Location Map	2
Figure 2: Annual Average Daily Traffic Counts, CDOT 2008	3
Figure 3: Monthly Visitation Trends for Sand Creek Massacre Historic Site, 2009	4
Figure 4: Sand Creek NHS Site Access Roads	5
Figure 5: Sand Creek NHS Alternate Site Access	6
Figure 6: Roadway Design Requirements	8
Figure 7: Directional Guide Sign and Informational Sign Locations	11
Figure 8: Simplified Detail of Site Access to Sand Creek NHS	13
Figure 9: Alternative A: No Action	16
Figure 10: Alternative B: Connecting People, History and Place	17
Figure 11: Alternative C: Emphasis on Memorialization	20
Figure 12: Alternative D: A Balanced Visitor Experience	21
Figure 13: Alternative E: Preserving Sensitive Resources	23
Figure 14: Gateways to the Region	27
Figure 15: Proposed Wayfinding Installation, Eads, CO	28
Figure 16: Kiowa County Heritage Trails Concept Map, 2010	29
Figure 17: Gateways and Potential Visitor Loops	31

Interpretive Text

The Sand Creek Massacre is a significant event in the history of the American West. It occurred on November 21, 1864, near Sand Creek, Colorado. The event was the result of a long history of conflict between the U.S. Army and the Cheyenne and Arapaho peoples. The U.S. Army had been fighting a series of wars against the Cheyenne and Arapaho since the 1840s. The Cheyenne and Arapaho were being pushed westward by the U.S. Army and were seeking refuge in the Sand Creek area. The U.S. Army, under the command of Colonel John Chivington, was sent to the Sand Creek area to destroy the Cheyenne and Arapaho villages. On November 21, 1864, the U.S. Army attacked the Cheyenne and Arapaho villages at Sand Creek. The attack resulted in the deaths of approximately 230 Cheyenne and Arapaho people, including men, women, and children. The Sand Creek Massacre is a tragic event in the history of the American West. It is a reminder of the violence and conflict that existed between the U.S. Army and the Cheyenne and Arapaho peoples. The Sand Creek Massacre is also a reminder of the importance of preserving the history and culture of the American West.

Introduction

The Sand Creek Massacre National Historic Site (NHS) Transportation Plan was developed in support of the National Park Service's General Management Plan (GMP)/Environmental Impact Statement (EIS) for the site. The Transportation Plan includes a review of the existing transportation facilities and visitation to Sand Creek NHS, recommendations for site specific transportation improvements, an assessment of transportation improvements as they relate to each GMP alternatives, and concepts for regional wayfinding and visitor improvements in support of increased visitation to the region and the Sand Creek NHS site.

Sand Creek Massacre National Historic Site Background and Description

Located in Kiowa County, Colorado, San Creek Massacre National Historic Site preserves and interprets the site where on November 29, 1864 units of the Colorado 1st and 3rd Cavalry, United States Volunteers attacked an encampment of Cheyenne and Arapaho Indians on Sand Creek, in southeast Colorado Territory. During the massacre that ensued over 150 men, women and children were slaughtered. The massacre shocked the nation and destroyed the fragile hopes for peace between these tribes and the white population of the Territory of Colorado. The war that erupted on the western plains in the wake of the Sand Creek massacre dragged on for 13 years and eventually ended the economic and political independence of the Cheyenne, Arapahos and other Great Plains tribes. Sand Creek Massacre National Historic Site commemorates this pivotal and tragic event in the history of the American West, preserves the massacre site, and interprets this complex event for the American public.

Project Purpose

The National Park Service is developing a General Management Plan (GMP)/Environmental Impact Statement (EIS) for Sand Creek Massacre NHS that identifies a vision for management of the site for the next 15-20 years. The GMP will help park management guide programs and set priorities for resource stewardship, visitor understanding and appreciation, partnerships, facilities and operations. In conjunction with the GMP, an EIS is also being prepared as part of the process in order to assess the impacts of the management alternatives described in the GMP.

The Alternative Transportation Study (ATP) is part of the GMP process and looks specifically at three important aspects of transportation for the Sand Creek Massacre site: 1) today's transportation conditions including safety, road capacity and condition, and points of access for visitors to the site; 2) future transportation conditions as they relate to each of the five proposed GMP alternatives and 3) regional travel demand and the link between Sand Creek Massacre NHS and other thematically-related sites in southeastern Colorado.

The ATP also addresses future needs for informational signage and wayfinding tools for visitors to the area, the importance of regional visitor visibility and the possibility of the development of a Sand Creek Visitor Center in Eads.

Existing Conditions

The Sand Creek Massacre National Historic Site (Sand Creek Massacre NHS) is located in southeastern Colorado, approximately 15 miles northeast of the town of Eads. The site sits east of US Highway 287 and north of Highway 96 at Chivington, as depicted in Figure 1. The site has been open to the public since its authorization in November of 2000. Visitor amenities at the location include a visitor center and bookstore, a walking trail to the site monument, interpretive signage and bathrooms.

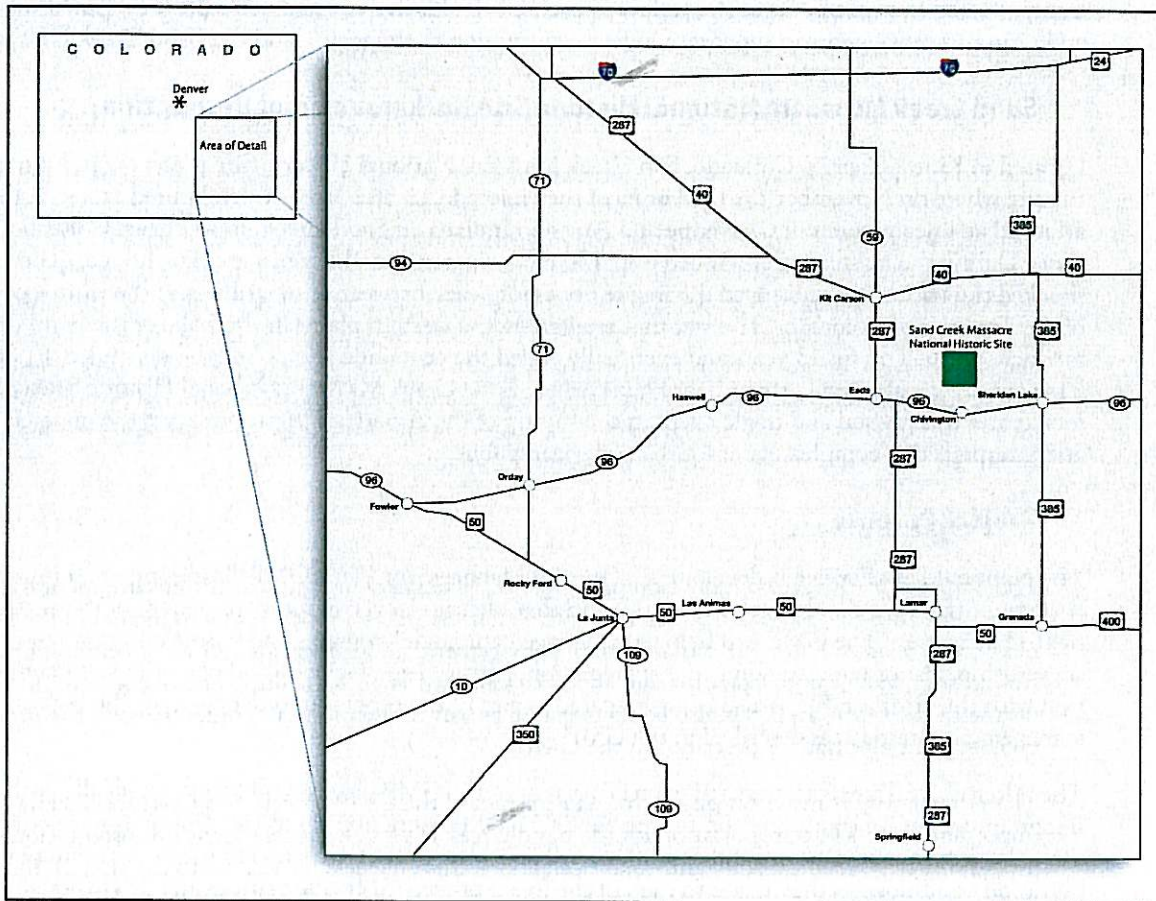


Figure 1: Sand Creek Massacre National Historic Site – Location Map

Regional Travel

The region is bisected north-south by US Highway 287, the Ports to Plains Highway corridor that runs between the U.S. Mexico border at Laredo, Texas and Denver, Colorado. US Highway 287 runs through Springfield, Lamar, Eads and Kit Carson in this region, before connecting with I-70 to the north. The region is also bisected east-west by State Highway 96 to Pueblo, and Highway 50 that passes through Lamar and Las Animas.

Figure 2 illustrates the Colorado Department of Transportation's (CDOT) Annual Average Daily Traffic (AADT) counts in 2008 by highway segment. The numbers indicate that Highway 50 is the most utilized highway in the region, with AADT counts

Draft Alternatives Transportation Plan February 2011

**Annual
Average
Daily
Traffic
Counts**
CDOT 2008

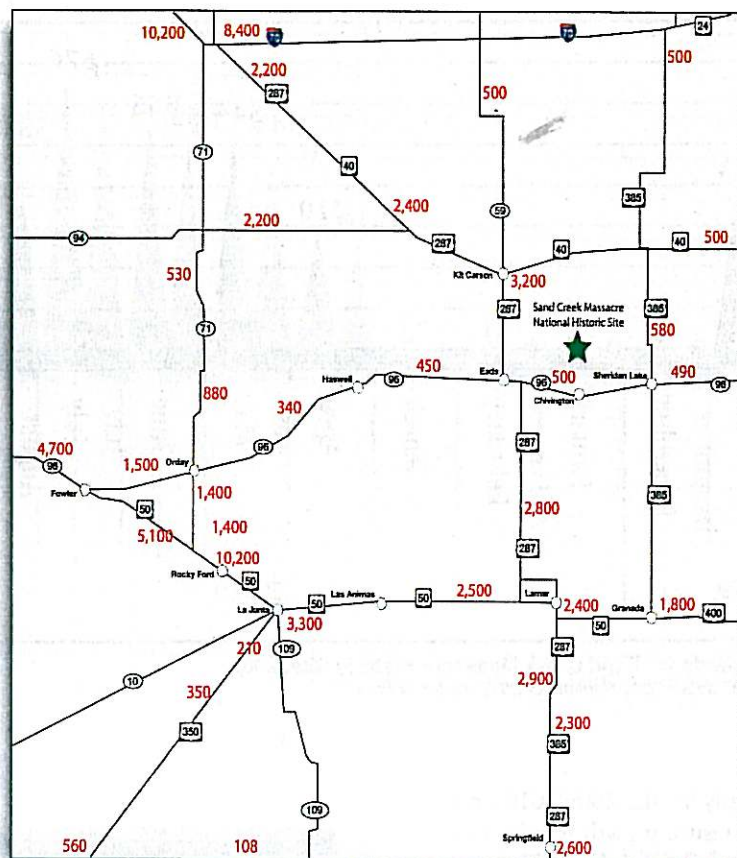


Figure 2: Annual Average Daily Traffic Counts, CDOT 2008

Because the preferred east-west movement between Kansas and Colorado is along Highway 50, rather than Highway 96, many travelers do not pass through Chivington, Eads or Haswell and are likely not informed of the Sand Creek Massacre National Historic site.

Visitation to Sand Creek Massacre NHS

Sand Creek Massacre NHS is open to the public from April to November, and closed except for scheduled viewing from December through March. Official visitor counts available from October 2009 to September 2010 indicate annual numbers for 2009/2010 of nearly 4,000 visitors to the site. Over 70% of this annual visitation occurred during the peak summer months of June, July and August and the supporting shoulder months of May and September, as shown in Figure 3. Visitation during this period averaged 585 visitors per month.

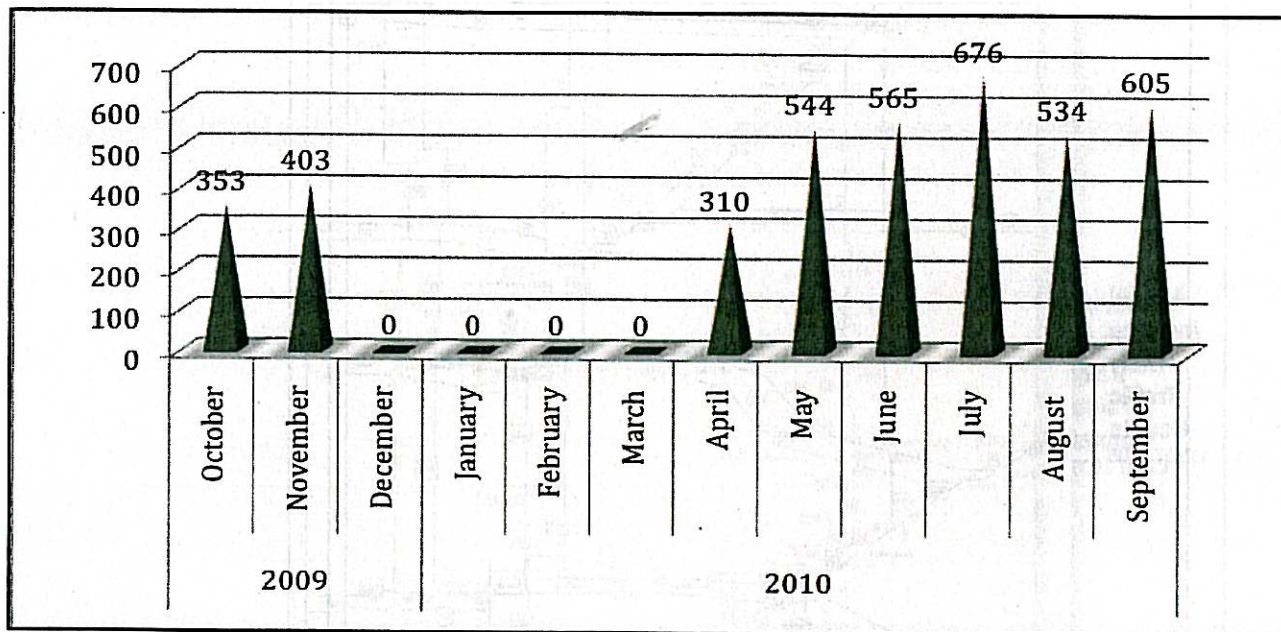


Figure 3: Monthly Visitation Trends for Sand Creek Massacre Historic Site, 2009
Sand Creek Massacre Historic Site, October 2009-September 2010 Visitor Counts

Official visitor counts are available only for the 2009/2010 time-frame, making it difficult to evaluate visitor growth trends or to estimate future visitor numbers at Sand Creek NHS. Therefore, Washita Battlefield National Historic Site (NHS), similar in nature to Sand Creek NHS and located similarly off a state highway in rural Oklahoma, was examined for comparative purposes and historic visitor numbers used as a basis of estimating potential visitor growth at Sand Creek NHS.

Since its opening in 1980, Washita Battlefield NHS annual visitor counts have grown from 220,000 in 1980 to roughly 285,000 in 2009, representing an increase of almost 30% for the 30-year period. Over the past decade (between 2000 to 2009) these numbers have fluctuated only slightly on an annual basis and have held fairly steady at 285,000 visitors per year for the decade. Therefore, the first decade of the park's history was examined in more detail. From 1980 to 1990, site visitation grew from 220,000 to 255,000, an increase of about 16%. Utilizing this trend, it is possible to project that Sand Creek NHS might expect a similar increase bringing 2010 visitation of 4,000 to about



Washita Battlefield National Historic Site,
National Park Service

Sand Creek Massacre NHS Access

Access to Sand Creek Massacre NHS is provided via State and County roads in the vicinity of the site. Roadways traveled by visitors in the vicinity of the Site are shown below in Figure 4.

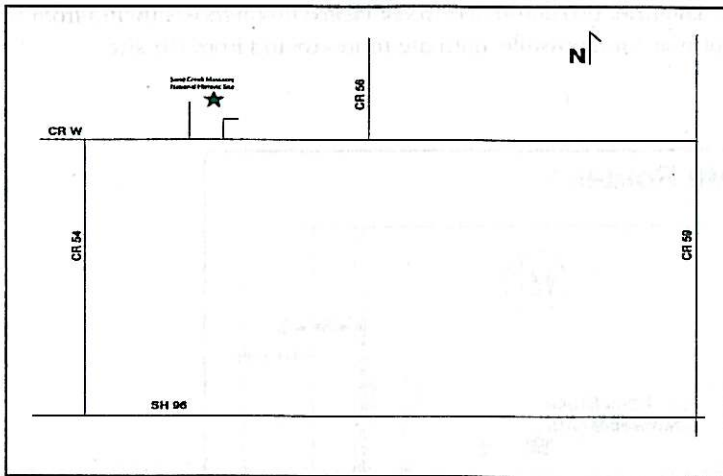


Figure 4: Sand Creek NHS Site Access Roads



Colorado State Highway 96: two lane paved state highway with 1 to 2 foot shoulders, 55 mph speed limit



Kiowa County Road 54 (recently renamed Chief White Antelope Drive): unpaved, improved county road, 55 mph speed limit



Kiowa County Road 59: unpaved, improved county road, 55 mph speed limit



Kiowa County Road W: unpaved, improved county road, 55 mph speed limit

Driving to the site from State Highway 96 requires traveling 8 to 10 miles on unpaved county roads that are susceptible to becoming slippery or impassable due to rain or snowstorms. Kiowa County performs maintenance activities such as grading on these roads frequently and refreshes the aggregate surface occasionally.

Alternative Routes and Points of Access to the Site

An investigation of sub-regional travel route choices was completed evaluating available primary and secondary routes to the Site. This investigation was coupled with the regional route assessment to determine likely visitor travel routes to and from the site and the surrounding area. Figure 5 below identifies the primary and possible alternate routes to and from the site.

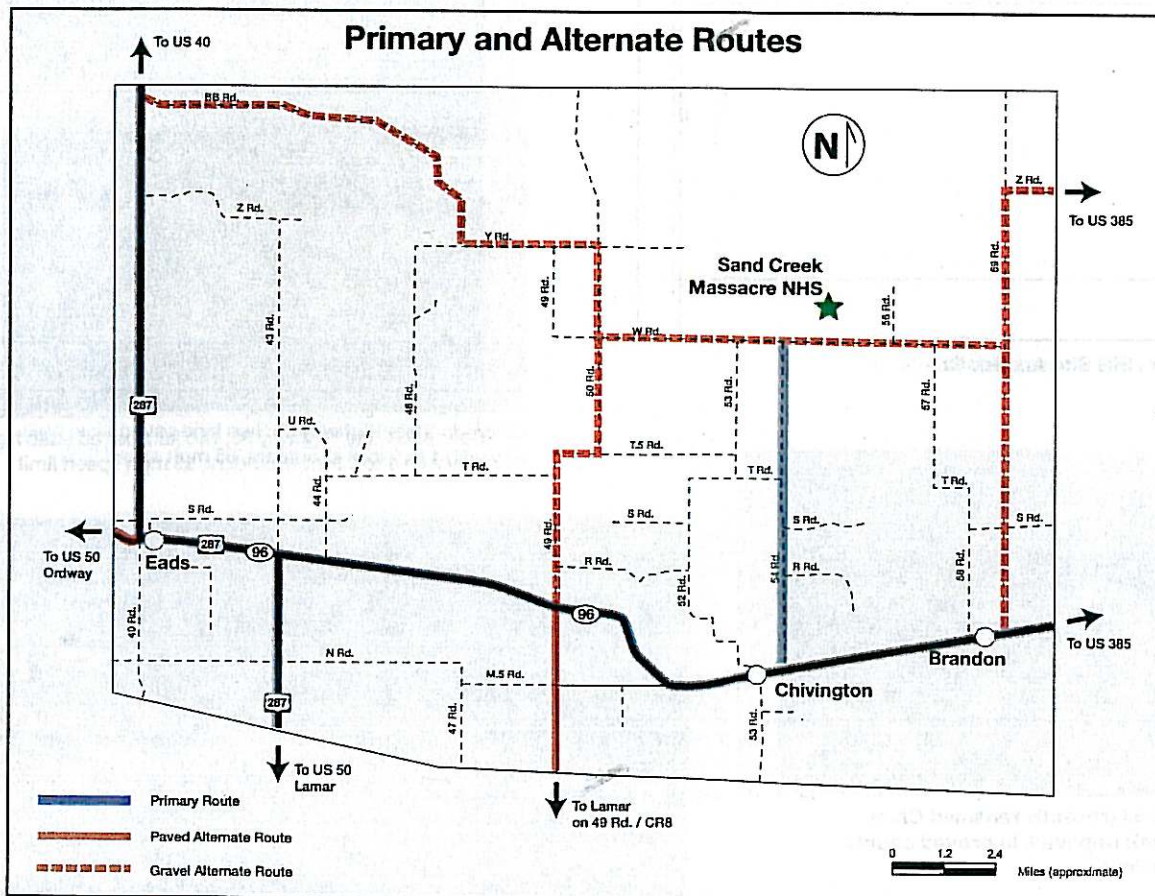


Figure 5: Sand Creek NHS Alternate Site Access

Although many routes are available for visitors to take to and from the Site, many factors enter into the actual route decision made by each visitor. They choose their route to and from the Site based on several factors including:

- Origin and direction of travel
- Directness of route
- Roadway condition and characteristics
- Ease of navigation
- Services along the route

Each of these factors' influence on route choice is discussed in detail below.

Origin and Direction of Travel

Visitors to the Site are generally coming from south of the Site along the US 50 corridor, from north of the site along the US 40 or I-70 corridors, from west of the site along the US 287 corridor, or east of the site along the US 385 corridor. Where they are coming from and going to directly affects the routes they take to and from the Site.

Directness of Route

Directness of route is important to visitors to the site but this factor is less relatively important in rural Colorado than it would be in a more urban area. Condition of the roads, ease of navigation, and services along the route are equally if not more important considerations for travelers in rural areas than choosing the most direct route. Because of the high travel speeds along the primary routes, additional distances often do not equate to additional travel time as compared to traveling the most direct route along an alternate access routes.

Roadway Condition and Characteristics

The National Highway System Routes of US 287 and US 385 have higher design standards and more funding for maintenance and improvements than other State Highways or County Roads in the area. They also have higher levels of traffic and a higher presence of law enforcement and highway aid service personnel. This is an important consideration for visitors to an unfamiliar area.

Ease of Navigation

All National Highway System Routes and most State Highways are included in popular mapping for visitors but many County Roads are not shown, especially gravel roads. Visitors to the Site will usually have good route information for the primary routes and little route information for alternate routes.

Services Along the Route

Visitors to unfamiliar areas are often concerned with the ability to obtain help in emergency situations including medical emergencies, automobile breakdowns, or criminal activity. They feel that staying on main routes with higher levels of activity will be "safer" than taking alternate or secondary routes.

Route Utilization Summary

Because of the factors discussed above it is assumed that nearly all visitors to the site will utilize US 287, US 385, and SH 96 between Eads and US 385 to access the site. Alternate routes including BB/Y/50/W Roads, Z/59/W Roads, and CR49 are all possible alternate routes to the site but are unlikely to attract significant numbers of visitors. The BB Rd and Z Rd alternate routes are unpaved and involve some navigation challenges. The CR49 route travels directly north from Lamar but is paralleled by US 287 for its entire length and is unlikely to draw large numbers of visitors.

CR 54 and CR 59 both serve as relatively direct access routes to the Site from SH 96. However, based on regional travel patterns it is assumed that most visitors will travel to and from the site from the west along SH 96 and 54 Rd is the most likely road to be traveled by visitors. In order to reduce confusion among visitors and to reinforce one travel route to and from the site it is recommended that CR 54 be emphasized as the primary route to and from the site instead of CR 59. This will allow the NPS and the County to focus on CR 54 for maintenance and safety patrols for visitors, will reduce visitor confusion, and potentially reduce sign installation and maintenance activities.

Traffic Characteristics and Design Standards

The Colorado Department of Transportation estimates that State Highway 96 carries approximately 500 vehicles per day and is subject to CDOT's design standards and access control requirements. Observations made during the site visit indicate that State Highway 96 is in compliance with CDOT design standards.

Traffic counts for the unpaved County roads are not available. However, given that visitation to the Site ranges between 300 and 600 visitors per month and that other activity on the unpaved County roads consists of gravel and agricultural traffic it is assumed that they each carry less than 400 vehicles per day on average. Guidelines for the design of roads of this nature are given by the "Guidelines for Geometric Design of Very Low Volume Local Roads (400 vehicles per day or less on average)" published by the American Association of State Highway and Transportation Officials (AASHTO) in 2001. An item to note is that the recommended design speed for low volume unpaved local roads is lower than the posted speed limit on Kiowa County Roads 54, 59, and W. AASHTO states that "design speeds for unpaved roads should normally be 45 mph or less, but may occasionally be as high as 50 mph in situations the designer considers appropriate" (page 50). It is unclear what the design speed of County Roads 54, 59 and W are however, using the posted speed limit of 55 mph as the design speed leads to the following design criteria:

- Total Roadway Width: 26 feet minimum traveled way including shoulders (Exhibit 1, page 18, agricultural access roads)
- Design Sight Distance: 405 feet required (Exhibit 8, page 34)
- Intersection Sight Distance:
 - Intersections with no traffic control- 300 feet (exhibit 14, page 4)
 - Intersections with stop control on the minor road- 935' for left turn from minor road to major road and 860' for right turn from minor road to major road (page 46 which refers the user to exhibits 9-56 and 9-59 in the AASHTO Policy on Geometric Design of Highways and Streets)

The design criteria discussed above is shown below in Figure 6 using the intersection of CR W and CR 54 as an example.

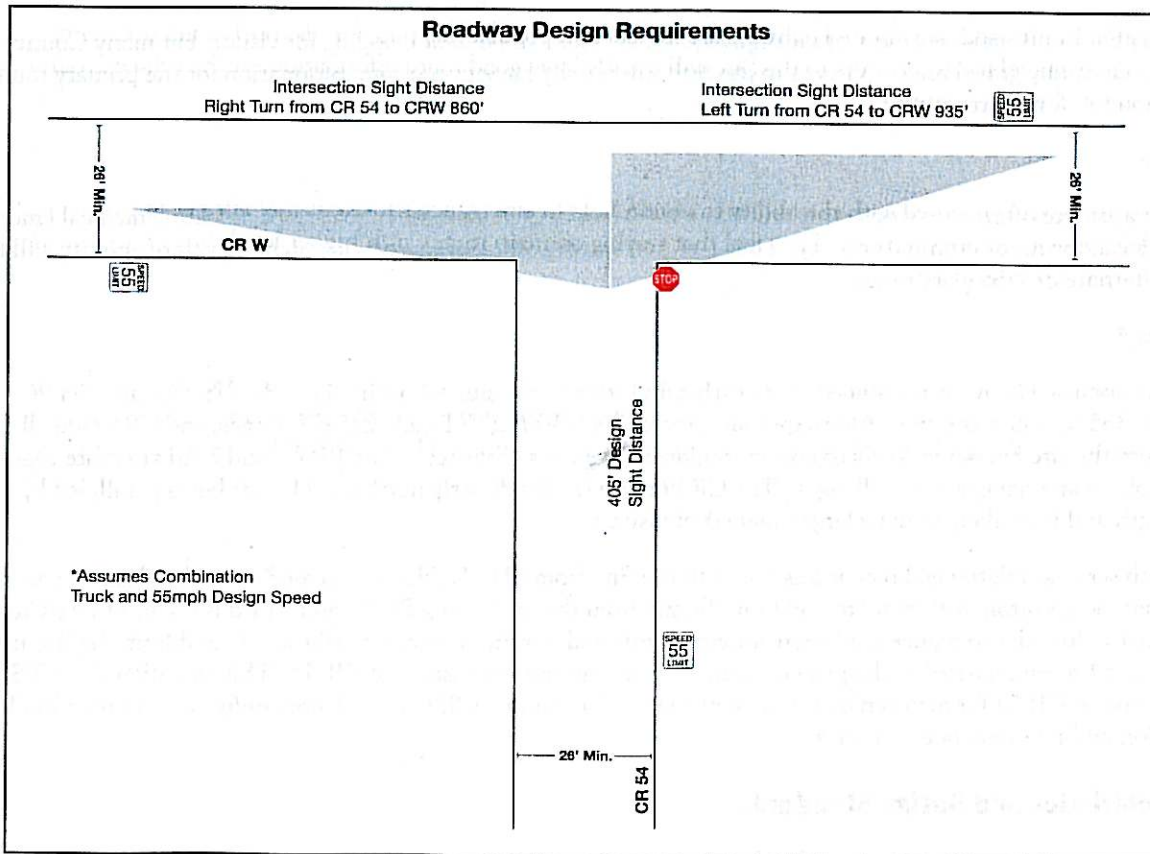


Figure 6: Roadway Design Requirements

Source: Guidelines for Geometric Design of Very Low Volume Local Roads, AASHTO, 2001 and A Policy on Geometric Design of Highways and Streets, AASHTO, 2001

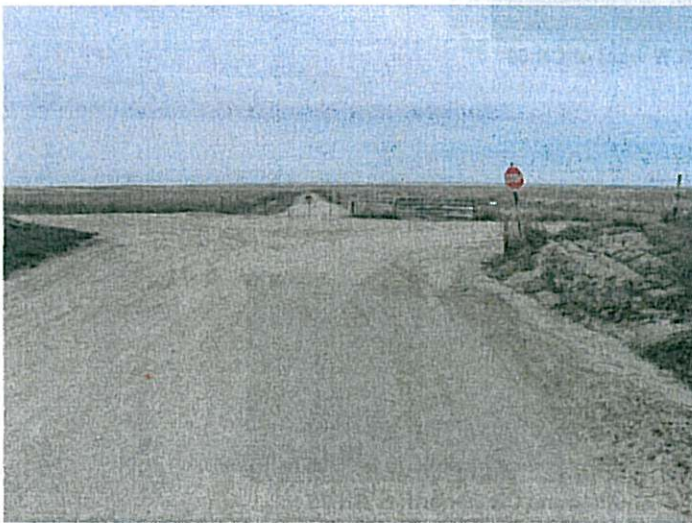
This intersection is of concern due to vertical curves on the south and west approaches that may cause sight distance values to be below the design standard minimums. Field measurements of sight distance values at this intersection were not made during the Oct 19-20, 2010 field visit but should be made to ensure compliance with the standards. CR 59 between CR W and SH 96 and CR W east of CR 54 both have less vertical curvature and appear to be in compliance with the roadway design standards published by AASHTO.

Signs

The Manual on Uniform Traffic Control Devices published by the Federal Highway Administration provides standards and guidance for placement of signs on roadways including regulatory signs, warning signs, and directional guide signs among others.

Regulatory Signs

Regulatory signs in the area include speed limit signs, passing zone signs, stop signs, yield signs, and railroad crossing signs. One consideration for improvement of regulatory signs in the area is to add a "stop ahead" (W3-1) sign for northbound traffic on CR 54 approaching CR W and to increase the sign size and to strengthen the mounting post for the stop sign for northbound traffic on CR 54 at CR W. These changes would provide greater visibility of the stop sign to drivers and ensure that the stop sign is in place at all times. These changes would also help unfamiliar drivers recognize and comply with the stop condition at this intersection.



County Road 54/W Intersection looking north

One missing regulatory sign is a railroad crossing crossbuck sign (R15-1) for southbound traffic on CR 59 just north of SH 96. It appears that the railroad track is currently inactive although this could not be confirmed. If the track is inactive then railroad crossing related signs and tracks across CR 54 and 59 should be removed. If the tracks cannot be removed then the R15-1 sign should be installed for southbound CR59 at SH 96.



Railroad Crossing on CR 59 just north of SH 96 looking south. Notice missing Railroad Crossbuck sign (R15-1) on right side of photo

Warning Signs

Warning signs in the area include intersection ahead signs, railroad crossing ahead signs, and stop ahead signs. The MUTCD specifies the minimum sign height for roadside signs in rural areas as being no less than 5 feet above the height of the roadway at the shoulder (Figure 2A-1 page 2A-9, MUTCD). Many of the warning signs in the area are mounted lower than this height and should be raised to meet MUTCD standards.



"Intersection Ahead" sign with low mounting height - heading east on CR W west of CR 59



"Stop Ahead" sign with low mounting height - southbound CR 59 north of SH 96



"Intersection Ahead" and "railroad crossing ahead" signs with low mounting height - southbound CR 59 north of SH 96

Directional Guide Signs

Signs consisting of white letters on a brown background are located along the travel routes to and from the site to direct visitors. The locations of the directional guide signs are shown in Figure 7.

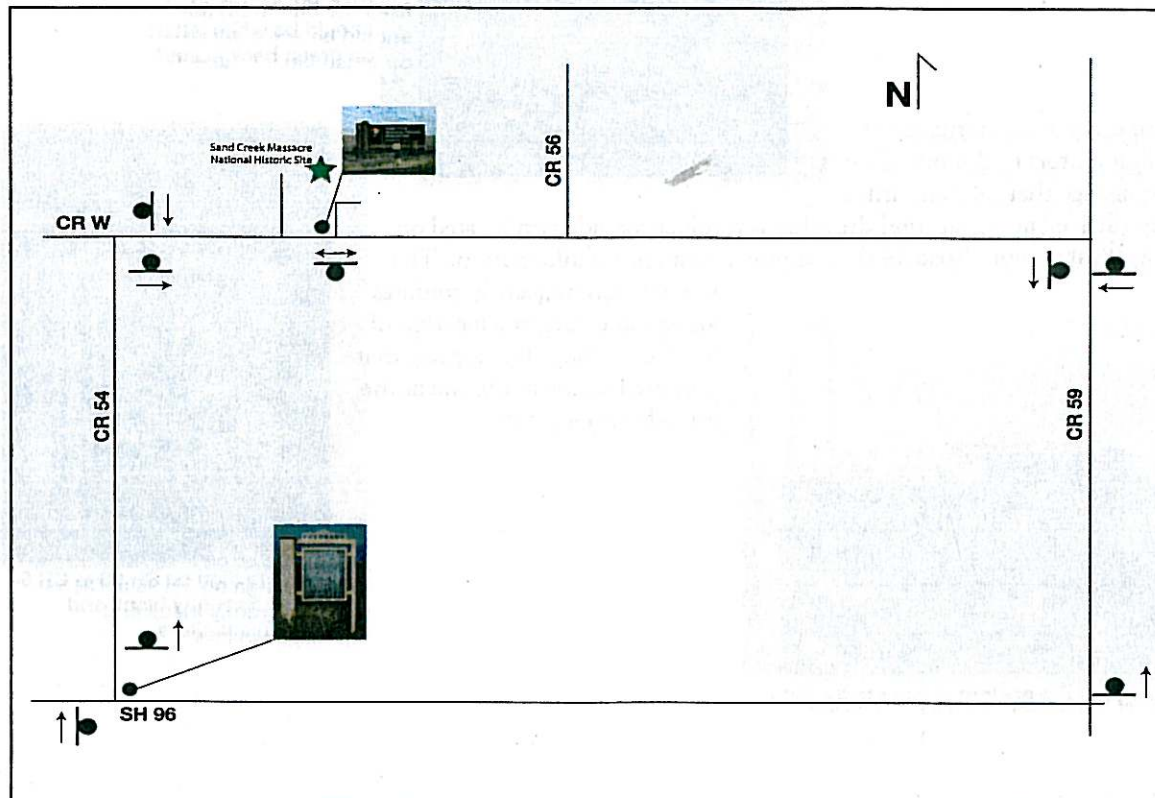


Figure 7: Directional Guide Sign and Informational Sign Locations



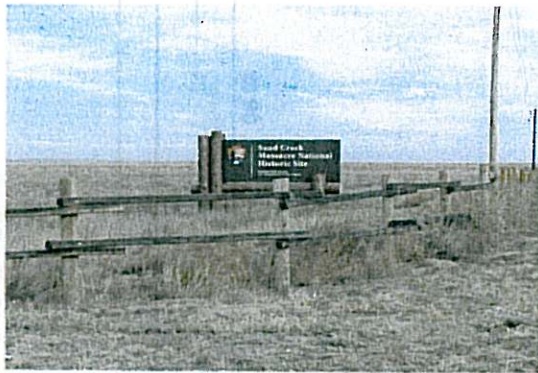
Example of directional guide sign to the Site

Directional guide signs directing visitors from the site to State Highway 96 have been incorrectly designed with white letters on a brown background and should instead be designed as white letters on a green background in compliance with Chapter 2D of the Manual on Uniform Traffic Control Devices (Guide Signs-Conventional Roads).

Sand Creek Massacre National Historic Site

Draft Alternatives Transportation Plan February 2011

There are two other signs of interest related to guiding visitors to the site. One is the entrance signage that informs visitors that they have arrived at the site and the other is an older wayside sign located on State highway 96 at County Road 54 that currently contains no information. The

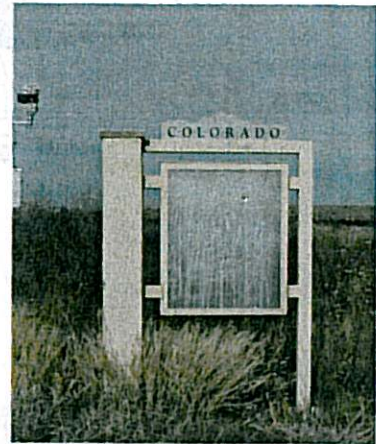


Entrance signage at the eastern access to the Site on CR W



Directional Guide Sign from the Site to SH 96 should be white letters on green background

The wayside sign frequently confuses visitors as to the true location of the Site as they often assume that they are looking at the site at the wayside sign location.



Wayside sign on SH 96 at CR 54 that is currently blank and confuses visitors

Other Considerations

Other factors potentially affecting operations and safety of the roadway system in the vicinity of the Site include:

- Weather related issues such as snow or rain can affect the drivability of unpaved roads in the area;
- Traffic mix of heavy trucks and light vehicles due to the agricultural and gravel pit related activity in the area can cause speed differentials;
- Mix of drivers who are very knowledgeable about local roadway characteristics and drivers who are unfamiliar with the area and local roadway characteristics can cause speed differentials and conflicts;
- Use of County Road W as both the main access to the Site and for regular gravel truck operations increases potential conflicts at the Site access points;

These factors can result in stranded or stuck vehicles during weather events, high speed differentials between locally knowledgeable users and drivers unfamiliar with the area, and a mix of higher speed through traffic and lower speed Site related destination traffic on CR W near the Site.

Site Specific Traffic Operations

There are two access points from CR W to the Site that were shown previously in Figure 1 and shown in greater detail below in Figure 8.

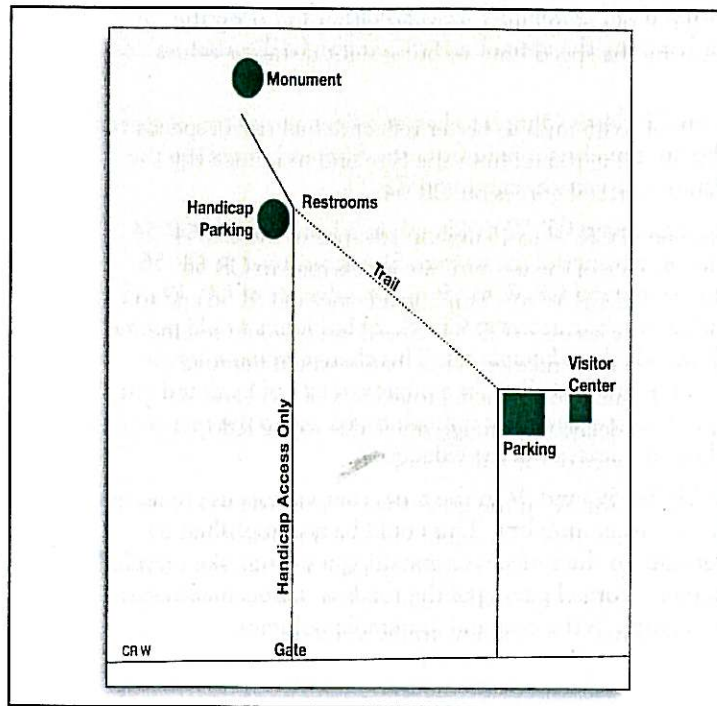


Figure 8: Simplified Detail of Site Access to Sand Creek NHS

The western access is restricted for use by handicapped or disabled visitors who are unable to walk from the main visitor area to the memorial area. It is gated and visitors must go to the main visitor center area to request that the gate be opened for their use. The eastern access is the main visitor access to the visitor center, bookstore, bathrooms, visitor parking, and trail access. The majority of visitor traffic enters and leaves the site through the eastern access. However, when requests are made for use of the

western access park staff must escort the visitor vehicle to the western access, open the gate, and monitor the access to ensure that other visitors do not use the western entrance. This requires both a large amount of staff time for each western access visitor trip and also exposes both the visitor and staff vehicle to high-speed traffic on CR W. This is a safety concern due to the lack of shoulders or a pull off area and the high speed of vehicles on CR W based on the 55 mph speed limit.

Recommendations

Based on the analysis and observations discussed above, the following changes are recommended:

- Change the signage directing visitors from the Site to SH 96 to white letters on a green background to comply with MUTCD standards,
- Add an informational plaque to the wayside sign on SH 96 at CR 54 to reduce visitor confusion,
- Check warning sign heights on CR 54, 59, and W for compliance with MUTCD standards,
- Add a "Stop Ahead" sign (W3-1) northbound on CR 54 south of CR W,
- Increase the stop sign size for northbound traffic on CR 54 at CR W and strengthen the mounting post to improve visibility and durability,
- Install a Railroad Crossbuck sign (R15-1) for southbound CR 59 at SH 96,
- Check compliance with sight distance requirements on CR 54 and W and at the CR 54/W intersection. If out of compliance consider either lowering the vertical curve profiles or lowering the speed limit to bring sight distance values into compliance,
- Reduce the speed limit on CR 54 to 45 mph to better reflect actual travel speeds of unfamiliar drivers who are traveling to and from the Site and to reduce the required design sight distance at vertical curves on CR 54,
- Reduce the speed limit for eastbound CR W to 45 mph in advance of the CR 54 intersection and to 35 mph in advance of the western Site access road to CR 56. Reduce the speed limit for westbound CR W to 45 mph in advance of CR 56 and to 35 mph in advance of the eastern Site access to CR 54. Speed limits would resume to currently posted levels outside these boundaries. This change would improve safety on CR W in front of the Site and allow for a improved mix of local and visitor traffic while resulting in minimal delays for through traffic due to the reduced speed limits because of the short distance of the reductions,
- Improve the surfaces of CR 54, 59, and W in the areas that visitors use to access the Site to provide for all weather mobility. This could be accomplished by adding an improved aggregate to the surfaces or installing a surface like recycled asphalt or recycled concrete. Formal paving of the roads is not deemed necessary at this time due to the high initial cost and low traffic volumes.

Sand Creek GMP Alternatives Transportation Analysis

The Sand Creek Massacre National Historic Site GMP/EIS process began with interim site planning and environmental review efforts in 2007. Since that time, the Sand Creek and NPS staff has conducted tribal consultations, public meetings, and briefings with the State of Colorado and Kiowa County. An Alternatives Workshop was held with NPS, the Tribes, the State of Colorado and Kiowa County to develop the draft management alternatives for the GMP. These alternatives were reviewed and refined in the second Management Alternatives Workshop held in December 2009. Following the Management Alternatives Workshop in December 2009, a total of five management alternatives were developed for the GMP planning process. They include:

- Alternative A – Continuation of Existing Conditions
- Alternative B – Sand Creek Massacre: Connecting People, History, and Place
- Alternative C – Emphasis on Memorialization
- Alternative D – A Comprehensive Visitor Experience
- Alternative E – Preserving Sensitive Resources

The location of the visitor center for Sand Creek NHS, as well as the transportation needs between the visitor center and the site, are common among all the alternatives and are discussed below.

The visitor center for Sand Creek Massacre NHS is proposed to be relocated to downtown Eads, Colorado. This location will provide greater visibility to travelers through Eads and along US 287, a major travel route through the region. The fact that the visitor center is removed from the actual Sand Creek site by approximately 23 miles causes some challenges in terms of directing visitors to the site from the visitor center, and vice versa. Improved directional signing will need to be installed along US 287 and along the route to Sand Creek NHS to improve the visitor's ability to navigate the area. There will also need to be directional signs installed from the site to the Eads Visitor Center to guide visitors on that journey.

The location of the visitor center in Eads and its relationship to the site is also expected to result in an emphasis on CR 54 as the primary route to and from the site. Slightly higher levels of traffic should be expected on CR 54 than exist today and the improvements recommended in the existing conditions section will become more important. These include:

- Add an informational plaque to the wayside sign on SH 96 at CR 54 to reduce visitor confusion,
- Check warning sign heights on CR 54, and W for compliance with MUTCD standards,
- Add a "Stop Ahead" sign (W3-1) northbound on CR 54 south of CR W,
- Increase the stop sign size for northbound traffic on CR 54 at CR W and strengthen the mounting post to improve visibility and durability,
- Check compliance with sight distance requirements on CR 54 and W and at the CR 54/W intersection. If out of compliance consider either lowering the vertical curve profiles or lowering the speed limit to bring sight distance values into compliance,
- Reduce the speed limit on CR 54 to 45 mph to better reflect actual travel speeds of unfamiliar drivers who are traveling to and from the Site and to reduce the required design sight distance at vertical curves on CR 54,
- Reduce the speed limit for eastbound CR W to 45 mph in advance of the CR 54 intersection and to 35 mph in advance of the western Site access road to CR 56. Reduce the speed limit for westbound CR W to 45 mph in advance of CR 56 and to 35 mph in advance of the eastern Site access to CR 54. Speed limits would resume to currently posted levels outside these boundaries. This change would improve

Sand Creek Massacre National Historic Site

Draft Alternatives Transportation Plan February 2011

safety on CR W in front of the Site and allow for a improved mix of local and visitor traffic while resulting in minimal delays for through traffic due to the reduced speed limits because of the short distance of the reductions,

- Improve the surfaces of CR 54 and W in the areas that visitors use to access the Site to provide for all weather mobility. This could be accomplished by adding an improved aggregate to the surfaces or installing a surface like recycled asphalt or recycled concrete. Formal paving of the roads is not deemed necessary at this time due to the high initial cost and low traffic volumes.

Additionally, the visitor center will result in higher levels of traffic and parking in the downtown area of Eads than exist today. There is a surplus of transportation capacity and parking in the area, however, so improvements to roadways and parking are not anticipated to be required.

Alternatives

Each of the management alternatives are described in this section and each alternative's transportation characteristics and recommendations are discussed. It is not anticipated that there would be a significant variation in the total number of visitors to Sand Creek Massacre NHS among the various alternatives.

Alternative A – Continuation of Existing Conditions

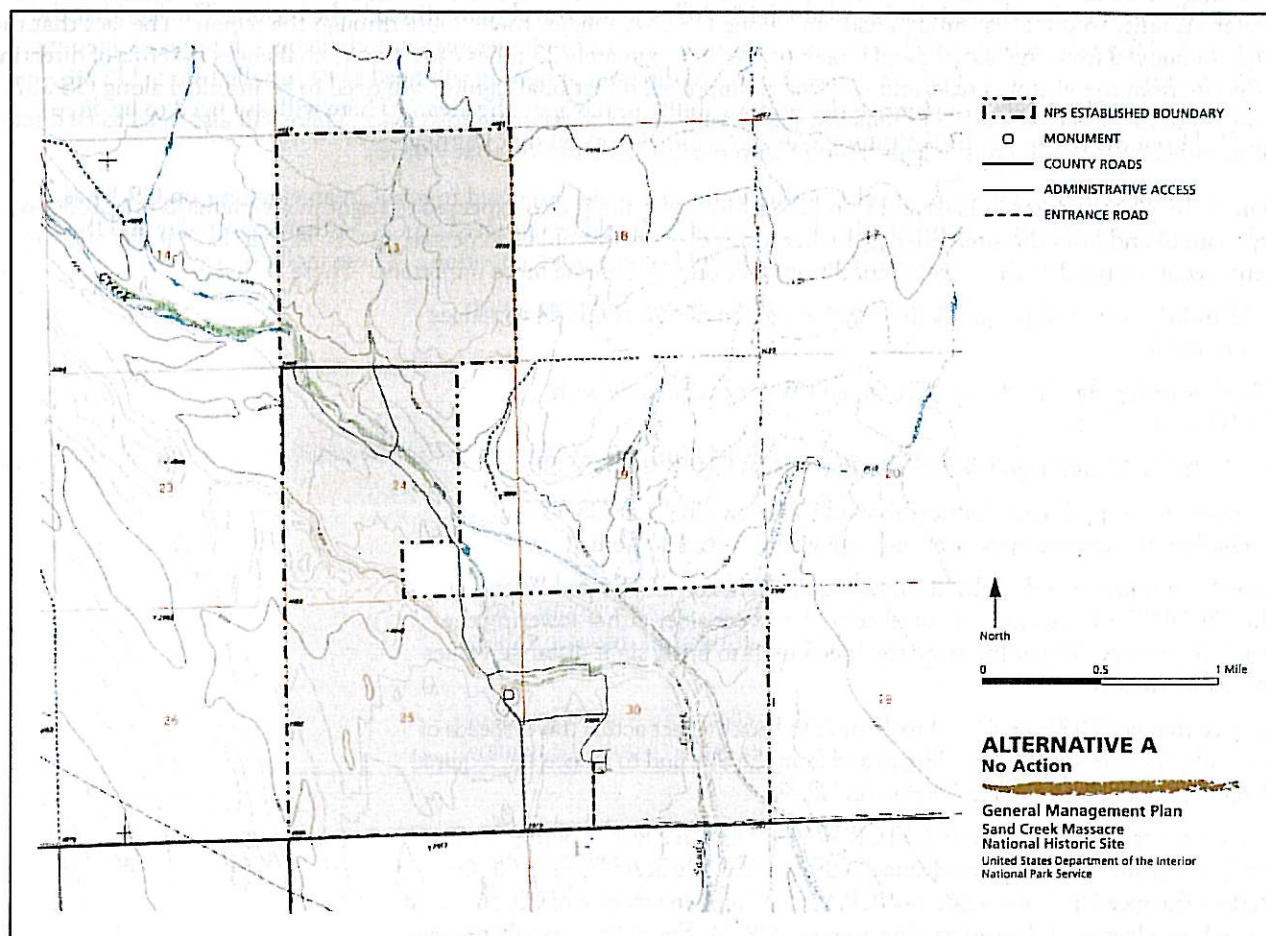


Figure 9: Alternative A

Alternative A is the "no action" alternative and reflects current management, visitor access and site conditions. It forms the baseline for comparison of the "action" alternatives (B, C D, and E)

Under Alternative A, the site would be managed in accordance with the interim site plan developed in September 2007. The headquarters would be located in the town of Eads, and the temporary administrative/visitor contact station in place now would remain in place. There would be limited interpretive and information signage at the site for visitors and the existing monument overlook and trail would remain in place. The maintenance facility would remain in the existing shop.

This alternative is configured exactly as the existing conditions analysis describes and all findings and recommendations of that analysis apply. One modification to the existing conditions that would result in greater safety for NPS Staff and visitors would be to create a small frontage road on NPS property just north of CR W to link the handicap access and parking at the monument area to the primary visitor entrance to the east. This would allow all visitor escorting and gate operations to occur on NPS property instead of on CR W that carries a significant amount of through traffic and reduce the exposure of staff and visitors to vehicles traveling on CR W.

Alternative B: Connecting People, History, and Place

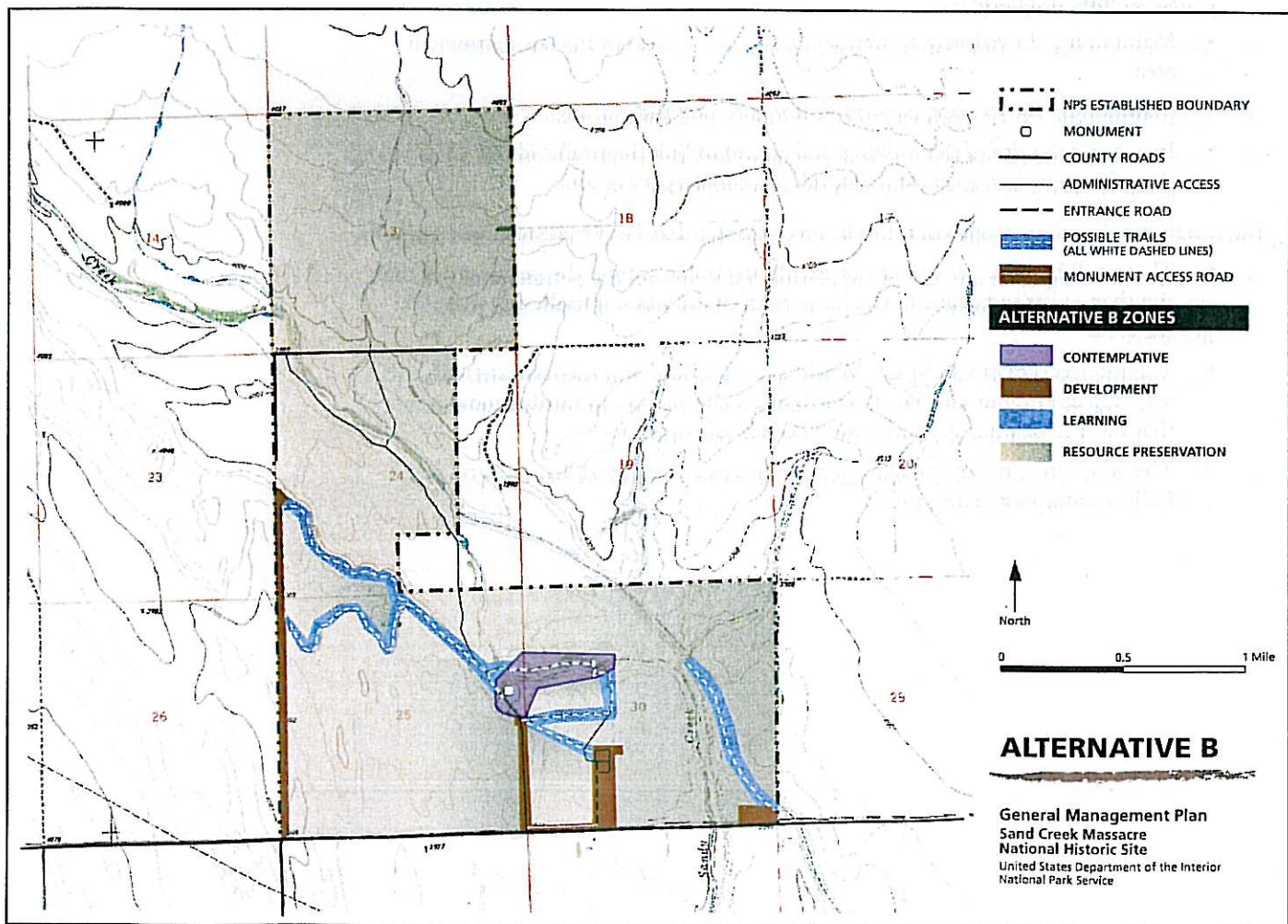


Figure 10: Alternative B: Connecting People, History and Place

Alternative B would offer the greatest variety and depth of interpretive media, programs and services, both onsite and offsite. It would provide visitors opportunities to access and experience certain areas of the landscape and gain a broader understanding of the massacre.

- At the site there would be opportunities for visitor access to the site through additional trail, road and parking development.
- The trails system would be extended to 4.8 miles to provide additional visitor access and interpretation.
- Varied onsite interpretive media and programs would provide visitors with a detailed narrative of the attack on the Sand Creek village.
- Facilities onsite would include maintenance, staff offices, water and comfort stations, benches, shade shelters, and additional parking in the southeast corner and on the western boundary.

This alternative has the greatest number of transportation related infrastructure associated with it, including:

- Allowing travel CR 54 to the north or CR W to access new trailheads
- Adding visitor parking and a trailhead to the southeast end of the Chivington Canal on NPS property.
- Maintaining the existing handicap parking and access road to the monument area
- Maintaining the existing primary visitor entrance and parking area
- Increasing the size of the walking trail system to link the trailheads on CR 54 to the primary visitor access and through the contemplative zone

Implementing this alternative will result in several issues that need to be resolved including:

- There will be a greater amount of circulating traffic around the perimeter of the site than exists today due to the location of the additional trailheads and parking areas
- The intersection of CR 54/CR W will become a four-way intersection with two-way stop control for CR 54. This will introduce additional turning movements that need to be carefully accommodated for safe operation
- The addition of more walking trails requires more rest areas/benches and potentially a water source for visitors.

Recommendations

- The parking area and trailhead for the Chivington Canal trail should not be located on CR W due to its higher volume of through traffic and the location of the vertical curve at the eastern end of the NPS property. The parking and trailhead should be located on CR 56 north of CR W to eliminate parking maneuvers on CR W and to consolidate turning vehicle traffic to the CR 56/ CR W intersection. Sight distance values need to be investigated for this intersection and if not in compliance either the vertical curvature or the speed limit will need to be reduced to meet AASHTO design criteria.
- Check compliance with sight distance requirements on CR 54 and W and at the CR 54/W intersection. If out of compliance consider either lowering the vertical curve profiles or lowering the speed limit to bring sight distance values into compliance.
- Reduce the speed limit for eastbound CR W to 45 mph in advance of the CR 54 intersection and to 35 mph in advance of the western Site access road to CR 56. Reduce the speed limit for westbound CR W to 45 mph in advance of CR 56 and to 35 mph in advance of the eastern Site access to CR 54. Speed limits would resume to currently posted levels outside these boundaries. This change would improve safety on CR W in front of the Site and allow for a improved mix of local and visitor traffic while resulting in minimal delays for through traffic due to the reduced speed limits because of the short distance of the reductions.
- Supplement the directional guide signage to include signs directing visitors to the new trailheads and from the new trailheads to SH 96. Also, due to the higher number of destinations at the Site, the directional guide signs and informational signs need to be improved to guide visitors to their chosen location.
- The two new trailheads on CR 54 should be linked via a trail or walkable area on CR 54 to create a safe trail "loop" along CR 54
- Create a small frontage road on NPS property just north of CR W to link the handicap access and parking at the monument area to the primary visitor entrance to the east. This would allow all visitor escorting and gate operations to occur on NPS property instead of on CR W that carries a significant amount of through traffic and reduce the exposure of staff and visitors to vehicles traveling on CR W.

Alternative C: Emphasis on Memorialization

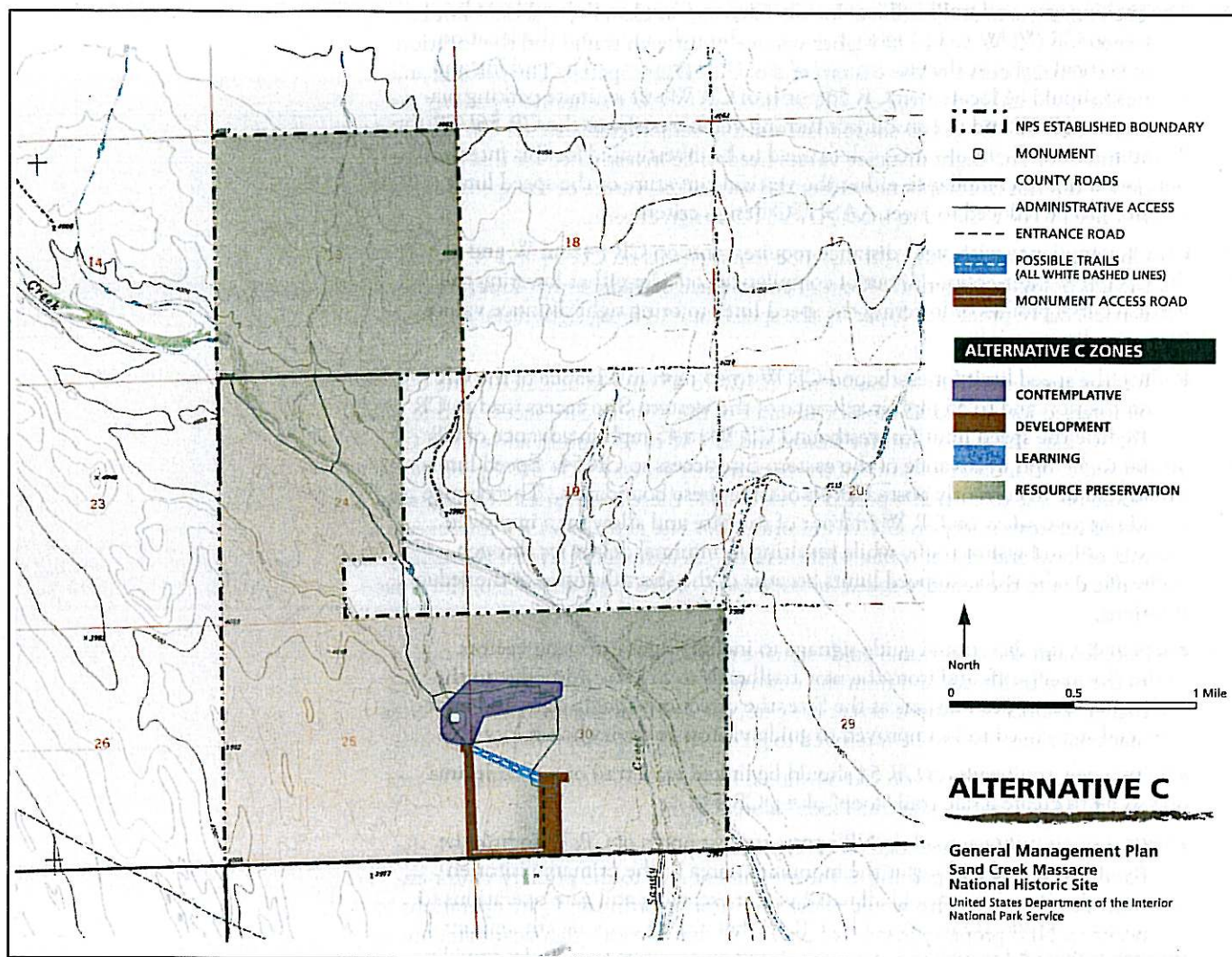


Figure 11: Alternative C: Emphasis on Memorialization

This alternative would offer visitors enhanced opportunities for reflection, reverence, and remembrance of the physical and emotional costs of the Sand Creek massacre. Development and visitor access would be the minimum necessary to commemorate the event. Visual and auditory distractions would be limited.

- Visitor access would be confined to the developed area and the monument overlook.
- There would be minimal trail development (0.3 mile) only between the developed area and the monument overlook.
- There would be limited interpretive media onsite.
- Facilities onsite would include maintenance facilities, staff offices, water and comfort stations, benches and shade shelters.

This alternative has the same transportation related infrastructure associated with it as the existing conditions including:

- Maintaining the existing handicap parking and access road to the monument area
- Maintaining the existing primary visitor entrance and parking area

Implementing this Alternative will result in no significant change from existing conditions and the recommendations outlined in Alternative A.

Alternative D: A Balanced Visitor Experience

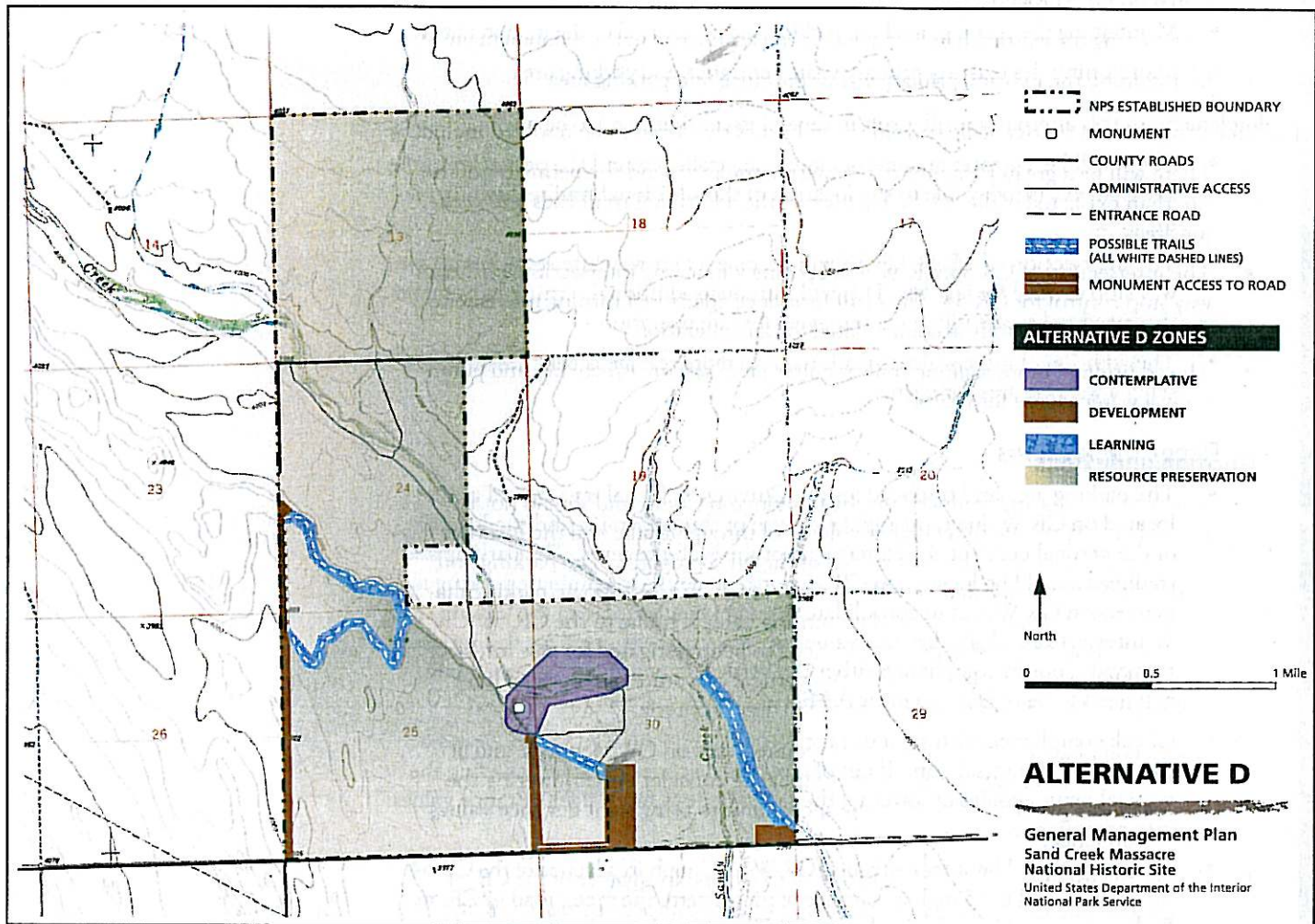


Figure 12: Alternative D: A Balanced Visitor Experience

This alternative would provide equal opportunities for interpretation and memorialization. The stories of the massacre would be shared through a variety of onsite and offsite education and interpretive programs, media, and services. Visitors would also have opportunities to access and experience certain areas of the landscape for reflection, reverence, and remembrance.

- The trail system would be extended to 3.2 miles, including a loop trail accessible from the road on the western boundary of the site.
- There would be moderate opportunities for public access.
- There would be moderate level of interpretive media onsite.

- Facilities onsite would include maintenance, staff offices, water and comfort stations, benches, shade shelters, and additional parking in the southeast corner and on the western boundary.

This alternative has the same transportation related infrastructure as Alternative B with the exception that the trail system accessed from CR 54 does not connect with the monument area or the primary visitor access and there is no trail through the creek bottom. Transportation infrastructure includes:

- Allowing travel CR 54 to the north or CR W to access new trailheads
- Adding visitor parking and a trailhead to the southeast end of the Chivington Canal on NPS property.
- Maintaining the existing handicap parking and access road to the monument area
- Maintaining the existing primary visitor entrance and parking area

Implementing this alternative will result in several issues that need to be resolved including:

- There will be a greater amount of circulating traffic around the perimeter of the site than exists today due to the location of the additional trailheads and parking areas
- The intersection of CR 54/CR W will become a four-way intersection with two-way stop control for CR 54. This will introduce additional turning movements that need to be carefully accommodated for safe operation
- The addition of more walking trails requires more rest areas/benches and potentially a water source for visitors.

Recommendations

- The parking area and trailhead for the Chivington Canal trail should not be located on CR W due to its higher volume of through traffic and the location of the vertical curve at the eastern end of the NPS property. The parking and trailhead should be located on CR 56 north of CR W to eliminate parking maneuvers on CR W and to consolidate turning vehicle traffic to the CR 56/ CR W intersection. Sight distance values need to be investigated for this intersection and if not in compliance either the vertical curvature or the speed limit will need to be reduced to meet AASHTO design criteria.
- Check compliance with sight distance requirements on CR 54 and W and at the CR 54/W intersection. If out of compliance consider either lowering the vertical curve profiles or lowering the speed limit to bring sight distance values into compliance,
- Reduce the speed limit for eastbound CR W to 45 mph in advance of the CR 54 intersection and to 35 mph in advance of the western Site access road to CR 56. Reduce the speed limit for westbound CR W to 45 mph in advance of CR 56 and to 35 mph in advance of the eastern Site access to CR 54. Speed limits would resume to currently posted levels outside these boundaries. This change would improve safety on CR W in front of the Site and allow for a improved mix of local and visitor traffic while resulting in minimal delays for through traffic due to the reduced speed limits because of the short distance of the reductions,
- Supplement the directional guide signage to include signs directing visitors to the new trailheads and from the new trailheads to SH 96. Also, due to the higher number of destinations at the Site, the directional guide signs and infor-

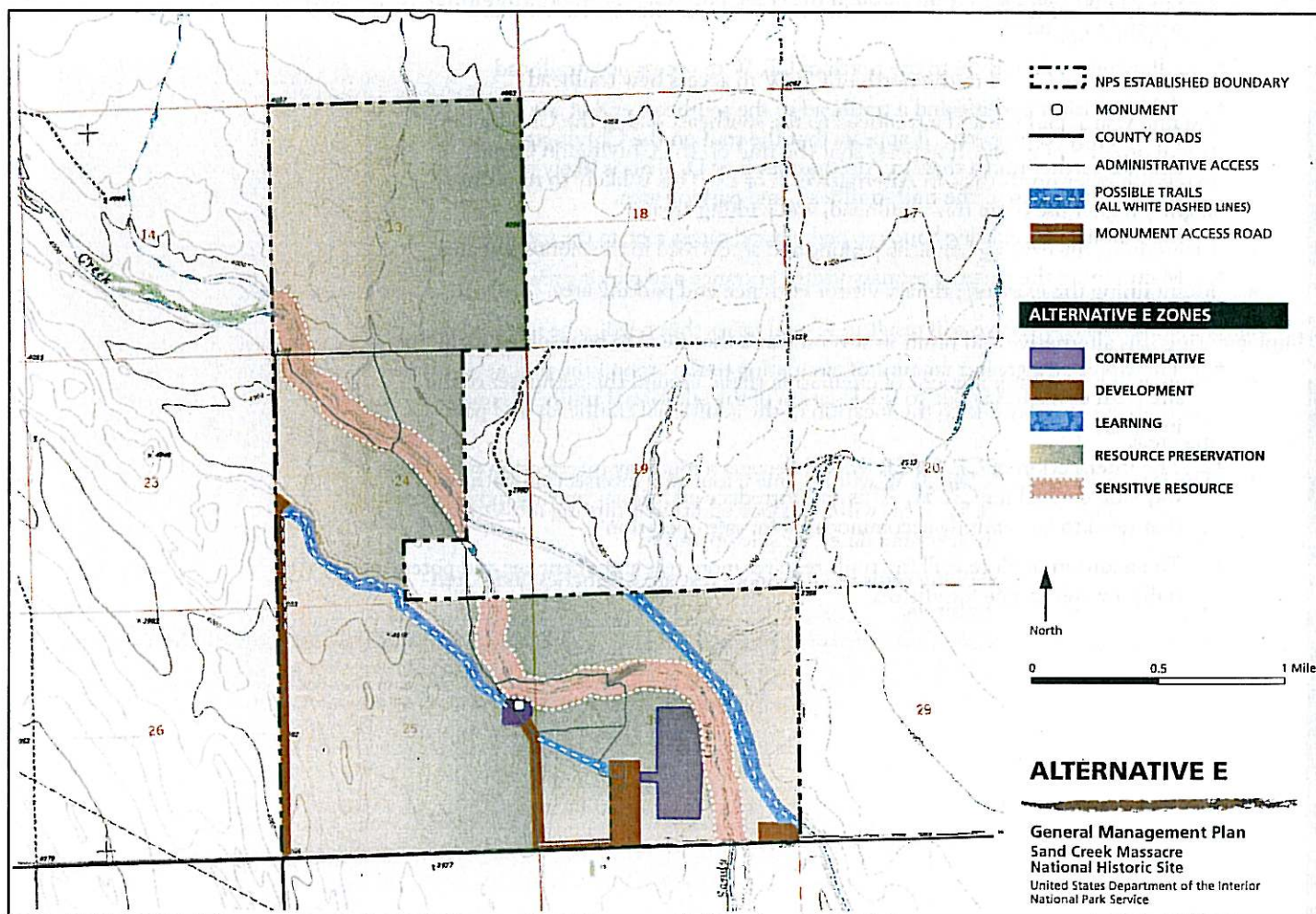
Sand Creek Massacre National Historic Site

Draft Alternatives Transportation Plan February 2011

mational signs need to be improved to guide visitors to their chosen location.

- The two new trailheads on CR 54 should be linked via a trail or walkable area on CR 54 to create a safe trail "loop" along CR 54
- Create a small frontage road on NPS property just north of CR W to link the handicap access and parking at the monument area to the primary visitor entrance to the east. This would allow all visitor escorting and gate operations to occur on NPS property instead of on CR W that carries a significant amount of through traffic and reduce the exposure of staff and visitors to vehicles traveling on CR W.

Alternative E: Preserving Sensitive Resources



- The Sensitive Resource zone, located along the creek bottom, would be closed to protect highly sensitive cultural and natural resources.
- The trail system would be extended to 2.7 miles, including the entire section of the Chivington Canal berm within the site boundary.
- There would be moderate opportunities for public access.
- There would be moderate levels of interpretive media onsite.
- Facilities onsite would include maintenance, staff offices, water and comfort stations, benches, shade shelters, a small foot bridge over the breach in the canal berm, and additional parking in the southeast corner and on the western boundary.
- This alternative has the same transportation related infrastructure as Alternative B with the exception that there is only one trailhead and parking area on CR 54 and there is no trail through the creek bottom. Transportation infrastructure includes:
 - Allowing travel CR 54 to the north or CR W to access new trailhead
 - Adding visitor parking and a trailhead to the southeast end of the Chivington Canal on NPS property. It appears that the trail on the Chivington Canal extends further north than in Alternatives B or D. This is likely to result in slightly higher use of the trail, trailhead, and parking area.
 - Maintaining the existing handicap parking and access road to the monument area
 - Maintaining the existing primary visitor entrance and parking area

Implementing this alternative will result in several issues that need to be resolved including:

- There will be a greater amount of circulating traffic around the perimeter of the site than exists today due to the location of the additional trailheads and parking areas
- The intersection of CR 54/CR W will become a four-way intersection with two-way stop control for CR 54. This will introduce additional turning movements that need to be carefully accommodated for safe operation
- The addition of more walking trails requires more rest areas/benches and potentially a water source for visitors.

Recommendations

- The parking area and trailhead for the Chivington Canal trail should not be located on CR W due to its higher volume of through traffic and the location of the vertical curve at the eastern end of the NPS property. The parking and trailhead should be located on CR 56 north of CR W to eliminate parking maneuvers on CR W and to consolidate turning vehicle traffic to the CR 56/ CR W intersection. Sight distance values need to be investigated for this intersection and if not in compliance either the vertical curvature or the speed limit will need to be reduced to meet AASHTO design criteria.
- Check compliance with sight distance requirements on CR 54 and W and at the CR 54/W intersection. If out of compliance consider either lowering the vertical curve profiles or lowering the speed limit to bring sight distance values into compliance,
- Reduce the speed limit for eastbound CR W to 45 mph in advance of the CR 54 intersection and to 35 mph in advance of the western Site access road to CR 56. Reduce the speed limit for westbound CR W to 45 mph in advance of CR 56 and to 35 mph in advance of the eastern Site access to CR 54. Speed limits would resume to currently posted levels outside these boundaries. This change would improve safety on CR W in front of the Site and allow for a improved mix of local and visitor traffic while resulting in minimal delays for through traffic due to the reduced speed limits because of the short distance of the reductions,
- Supplement the directional guide signage to include signs directing visitors to the new trailheads and from the new trailheads to SH 96. Also, due to the higher number of destinations at the Site, the directional guide signs and informational signs need to be improved to guide visitors to their chosen location.
- Create a small frontage road on NPS property just north of CR W to link the handicap access and parking at the monument area to the primary visitor entrance to the east. This would allow all visitor escorting and gate operations to occur on NPS property instead of on CR W that carries a significant amount of through traffic and reduce the exposure of staff and visitors to vehicles traveling on CR W.

Regional Planning

During the planning process, the consultant team talked with representatives of Eads, Kiowa County, the Colorado Division of Wildlife, the National Park Services Rivers, Trails & Conservation Assistance Program, the Southeast Colorado Heritage Agriculture and Tourism Organization (SEHCORT) and others to discuss the recent efforts to identify the unique cultural resources of the region, and to increase the visibility of these resources to the traveling public through improved mapping, wayfinding, signage and informational publications in the communities through which they travel.

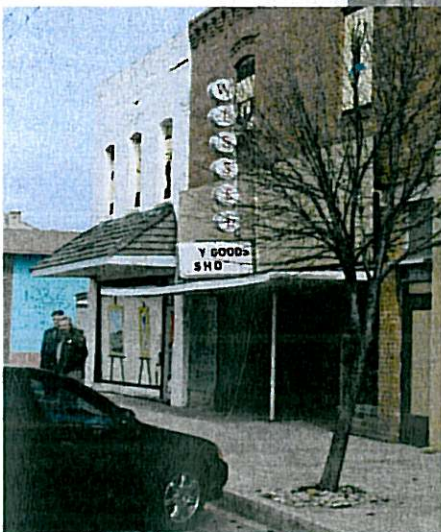
The planning efforts discussed in this section are comprehensive in nature and critical to establishing a regional context for investments in improved public information about the region. Better information and wayfinding regarding the region's cultural heritage, combined with the identification of connectivity routes between these unique resources, is essential to enhancing public understanding of the region and increasing visitation to the region and Sand Creek Massacre National Historic site over time.

This section discusses many of the efforts underway and highlights some of the regional destinations that can work together to draw a greater number of visitors to the area, and specifically to Sand Creek Massacre National Historic site. A map of the region highlights the region's resources and indicates potential travel routes among resources that are designed to offer interesting alternative travel routes off Highway 50.

Staff at Sand Creek Massacre site and the National Park Service, along with the Town of Eads and Kiowa County, have identified the Murdock Building on Main Street in Eads as the new site for the development of the Sand Creek Massacre National Historic Site Visitor Center and research facility. The redevelopment of this site for the future Visitor Center within town will be accessible to travelers along US Highway 287 and State Highway 96, and should enable a greater number of people to learn about Sand Creek, whether they can afford the time to travel to the site or not.



New Visitor Center in Eads, Colorado



Wayfinding Plans

The development of the Visitor Center in Eads will be complemented by the efforts of the **Regional Wayfinding and Interpretation Project for Southeast Colorado** that identified four Gateway Communities and entry points to the Canyons and Plains region.

These gateways include the following depicted in Figure 14.

- US Highway 287 at Eads, the Northern Gateway
- Highway 50 at Fowler, the Western Gateway
- US Highway 287 at Springfield, the Southern Gateway
- Highway 50 at Grenada, the Eastern Gateway

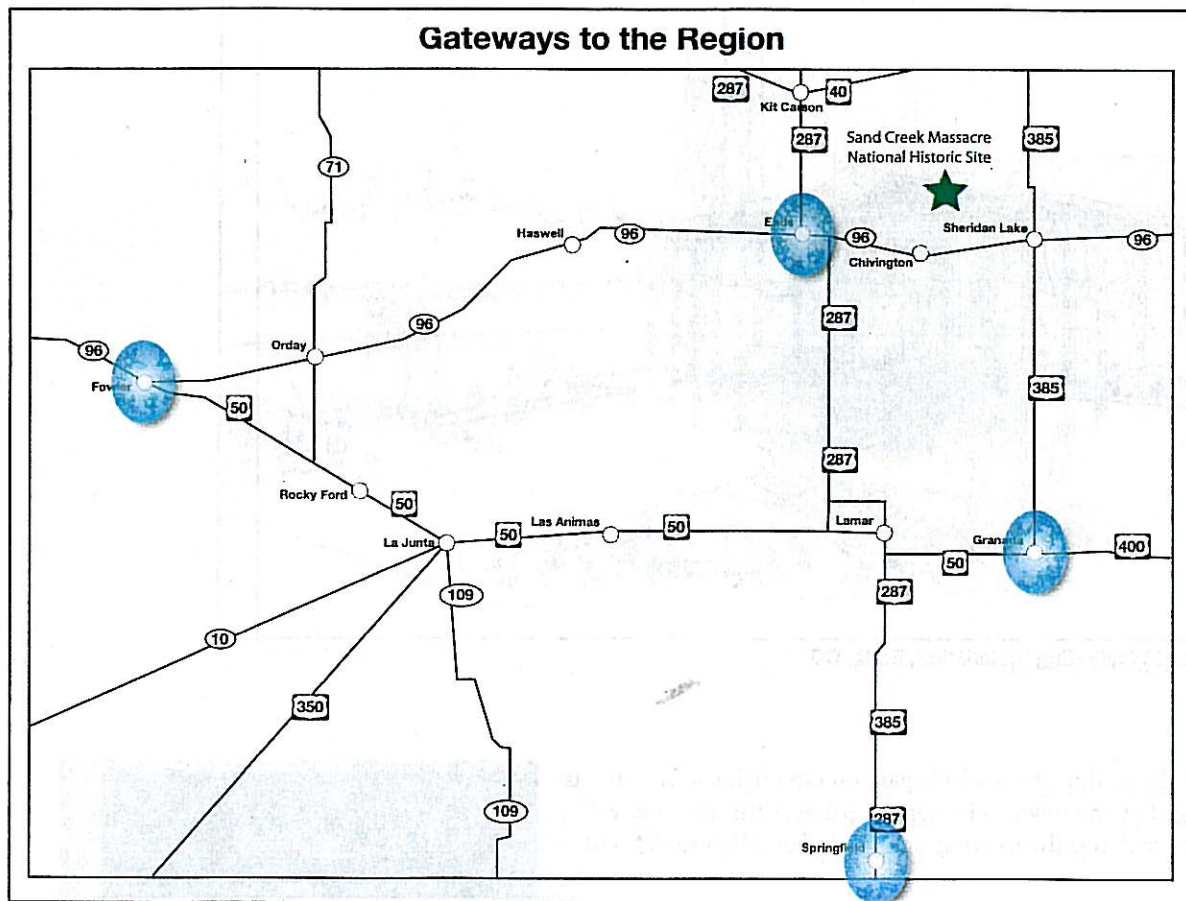


Figure 14: Gateways to the Region

In 2008, SECORHT began work to develop the interpretive message and installation designs for informational kiosks in each of these key communities in Phase 1 of the project. The wayfinding and interpretive project was approved and fully funded in 2009; \$40,000 from Preserve America and \$40,000 from the Colorado Division of Wildlife. Coordination for the project has included Colorado Division of Wildlife, National Park Service, the US Forest Service and many stakeholders within SECORHT and the communities within the five-county region. Partners for each gateway have been instrumental in supporting additional features of the wayfinding installations, and making them unique to each community.

Sand Creek Massacre National Historic Site

Draft Alternatives Transportation Plan February 2011

The six-paneled installations will highlight information for Sand Creek Massacre site, the Southeast Heritage Trail, the Kiowa Creek Nature Center and other local culturally significant destinations. Figure 15 illustrates the proposed installation in Eads, Colorado.

The local working committee for the installation has included personnel from the National Park Service responsible for the interpretation and management of the Sand Creek Massacre National Historic Site, the chair of the Kiowa County Economic Development Commission, the US Department of Agriculture representative from the Kiowa Creek Natural Area, the local Historical Society and the Town of Eads.

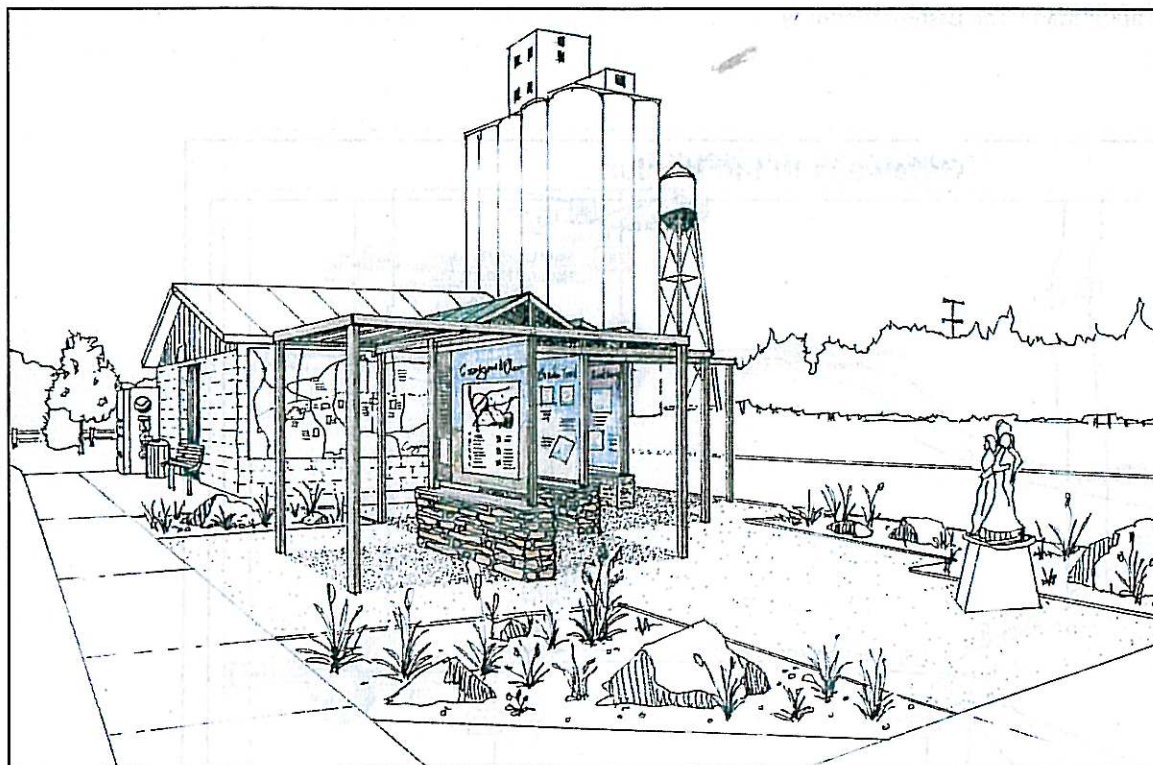
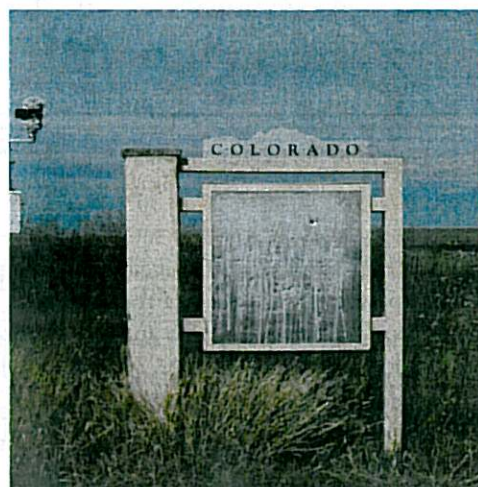


Figure 15: Proposed Wayfinding Installation, Eads, CO

The panels will be located in the roadside park on US Highway 287 that is owned and managed by the town. The current panel at this location will be removed and placed into the existing sign located on Highway 96 and Highway 54.

In addition to the installations at the Gateways, a specific wayfinding plan for Southeast Colorado was completed in 2008: **A Framework for Wayshowing: Canyons & Plains of Southeast Colorado**; Baca, Bent, Crowley, Kiowa, Otero and Prowers Counties.



Kiowa County Planning

The result is the Kiowa County Heritage Trail driving loop highlighting destinations along Highway 96 and south of Highway 96. Kiowa County assets, as depicted in the Plan's Concept Map in Figure 15 include the Towner Bus Tragedy Sites south of Highway 96, the Waelk Museum in Sheridan Lake, Sand Creek Massacre north of Highway 96, Kiowa Creek Nature Area, the Prairie Horizons Trail, Haswell's Nation's Smallest Jail, the concentration of Homesteads and school sites northwest of Highway 96 and Adobe Creek and Great Plains Reservoirs south of Highway 96. These local efforts bring visibility to the unique resources along Highway 96 and support visitor travel to Eads and the Sand Creek Massacre site via Highway 96.

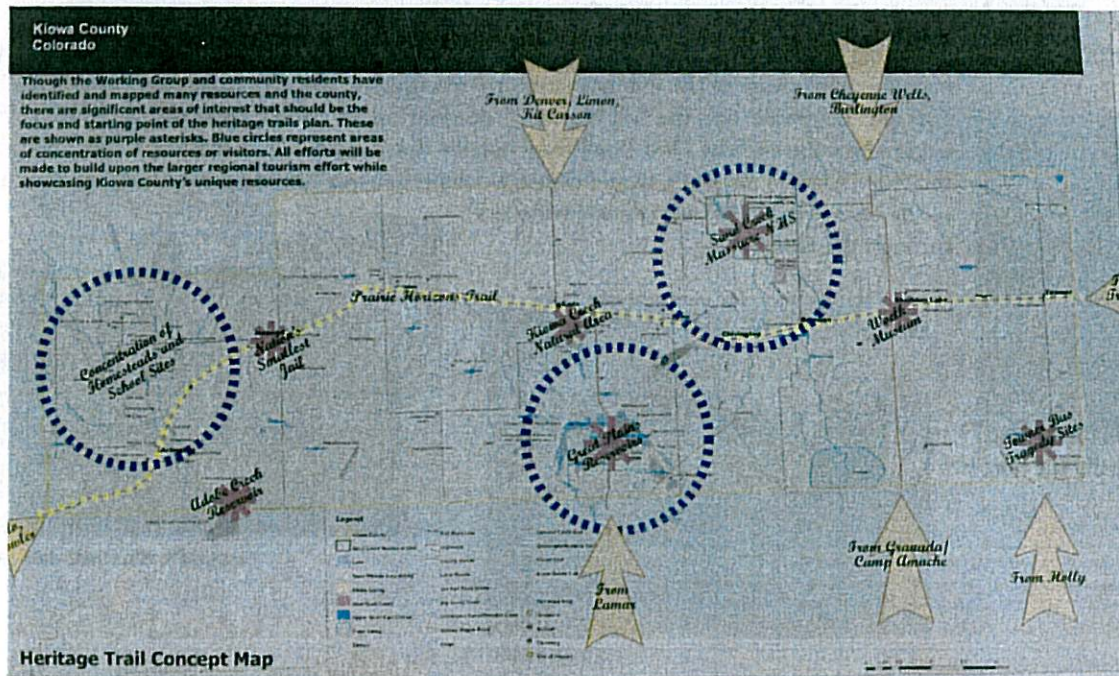


Figure 16: Kiowa County Heritage Trails Concept Map, 2010

Colorado Division of Wildlife Birding Trails

The Colorado Division of Wildlife has developed a full-color Southeast Colorado Trail Guide booklet that highlights the key sites along each of the region's birding and wildlife trails. The Snow Goose Trail is highlighted in the Eads and Sand Creek area and key birding destinations along the Trail include the Sand Creek Massacre site itself, and the Bowen Ranch and Sand Creek Battle Grounds located just north and west of the site. The wildlife birding trails are a unique feature of this region and a key element of the visitor experience in the area.

Regional Resources and Proposed Connectivity

The map in Figure 16 shows a comprehensive picture of the historic and cultural resources located within the region. SECORHT identifies the primary historic resources in the region as Sand Creek Massacre National Historic Site, Boggsville, Comanche National Grasslands, Camp Amache, Bent's Old Fort, and the Santa Fe Trail. These destinations, as well as others, are identified on the map in Figure 16.

The "community identified" resources, such as Haswell's Jail, the Division of Wildlife's Birding and Wildlife trails and the Kiowa Creek Nature Area, strengthen the unique character and history of the area and fill the gaps for travelers between the major destinations.

Figure 17 illustrates several visitor travel concepts that connect the rich resources and visitor destinations in the region. The potential Gateway Loop, shown in purple in Figure 17, links the four Gateway communities and nearly all the key visitor destinations in the area. The Gateway Loop would utilize segments of the Kiowa Heritage Trail, the Santa Fe Trail National Scenic & Historic Byway and the Wildlife Birding Trail and create a designated and well-informed visitor information loop for the region. By establishing a visitor loop and highlighted destinations, visitor travel along Highway 96 may increase and visitors may become more aware of the extent of cultural resources in the area including Bent's Old Fort and Boggsville and the "off-highway" destinations of Sand Creek Massacre NHS, Camp Amache and the Dust Bowl Sites outside Springfield. The Gateway Loop, and related visitor information, would create a comprehensive historic and cultural picture of the entire region for visitors and travelers through the area.



Bent's Old Fort



Boggsville



Haswell, Smallest Jail

Sand Creek Massacre National Historic Site

Draft Alternatives Transportation Plan February 2011

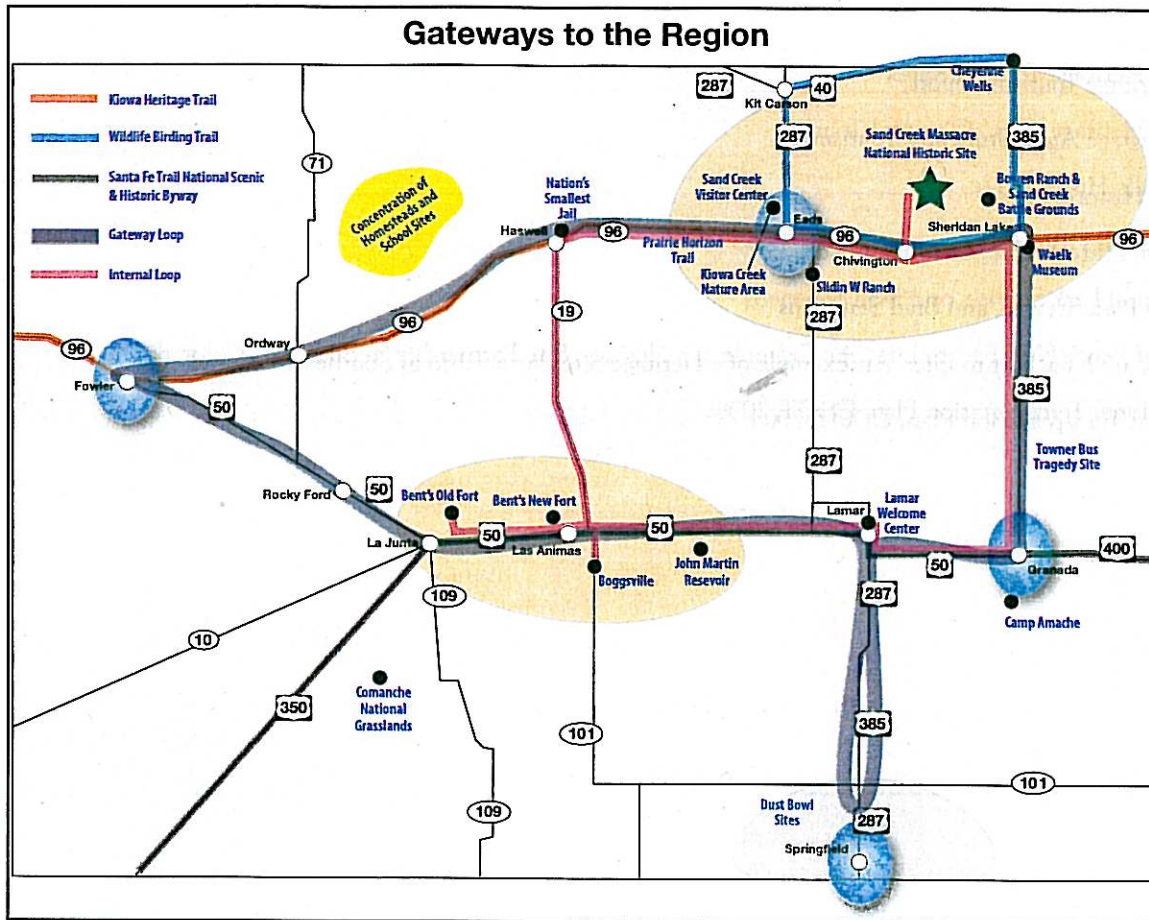


Figure 17: Gateways and Potential Visitor Loops

A shorter visitor loop is highlighted in pink in Figure 17, the Internal Loop. This loop offers a similar designated and informed visitor route, but it is shorter and centered around Highway 287 and Eads. This loop connects key destinations in Eads and Lamar and pulls in Sand Creek Massacre NHS, Boggsville and Haswell's Jail and is a potential reasonable visitor activity for visitors traveling north-south through the area along Highway 287. A description of this loop for visitors might include:

- Travel Highway 96 from the Sand Creek Massacre NHS Visitor Center in Eads east to Chivington with a detour to Sand Creek site;
- Travel along 385 south to Granada and Camp Amache,
- Travel west along Highway 50 to Lamar and on to Boggsville
- Detour from Las Animas to Bent's Old Fort and back
- Travel Highway 19 north to Haswell
- Travel back east along Highway 96 to Eads.

Both visitor loops would serve Eads, the future Sand Creek visitor center and Sand Creek Massacre NHS, create the opportunity to highlight resources along the Kiowa Trail and incorporate the cultural heritage and wayfinding information being developed at the four Gateway communities. Visitor loops would highlight the expanse of resources in the region and serve to encourage visitors to spend time in the area, travel to Sand Creek Massacre NHS and other historic sites and come to understand the unique history of the region.

Sand Creek Massacre National Historic Site

Draft Alternatives Transportation Plan February 2011

Sources:

Southeast Colorado Heritage Tourism Report

Southeast Colorado Heritage Agriculture and Tourism

Site visits to Boggsville Historic Site

Bent's Old Fort National Historic Site, La Junta, Colorado

Alexa Robert, National Park Service, and Brad Semmens

Bringing the Story of Bent's New Fort to Life: An Example of a Heritage Site Partnership in Southeast Colorado.

2035 Southeast Regional Transportation Plan, CDOT, 2008

Conclusion

To be developed.

